

# **EXHIBIT 5**

**Fish and Wildlife Service  
Preparatory Notes for 12/3/03 Meeting  
Exposure Pathways**

The Fish and Wildlife Service has expressed concern that tests by EPA's Office of Pesticide Programs in support of pesticide registration do not address all likely exposure pathways. Specifically, the FWS has raised questions concerning the possibility of dermal exposure and inhalation only a limited number of species, and most specifically do not include tests on certain classes of species.

From the FWS's perspective, the first priority to address this issue should be a process to ensure that any available tests that would address these exposure pathways would be obtained during EPA's evaluation process. That is, if a test or a study does examine the effects of a specific pesticide using a certain pathway, that data would normally be preferable to relying solely on data that do not address that pathway. Evaluation of such a test or study would include review of the extent to which the results are reliable.

Recognizing that such data may not be available in many cases, the FWS believes EPA itself may have already developed appropriate means to address this issue. EPA has already developed models to estimate exposure to birds through drinking water, inhalation, and dermal exposure. Consequently, the FWS believes these models should be included in the assessment screen to implement the best available science. (See, [http://www.epa.gov/oppefed1/ecorisk/large\\_dfy.htm](http://www.epa.gov/oppefed1/ecorisk/large_dfy.htm)). To the extent that these or additional models may be developed, the FWS understands future discussions would be necessary before any such models may be implemented.

Separately, the FWS believes EPA may already be in possession of other data that may constitute the best available information. Specifically, we suggest more assertive use of human health data to consider all pertinent routes of exposure. For example, the Health Effects Division (HED) toxicity categories can be used to identify where oral and dermal routes of exposure may be toxicologically significant (see link, [http://www.epa.gov/pesticides/health/tox\\_categories.htm](http://www.epa.gov/pesticides/health/tox_categories.htm)). Where HED has identified that an alternative route of exposure is hazardous to humans, we believe it can be presumed that it is also hazardous to terrestrial wildlife. Ideally, aggregate exposure from all routes will be calculated. However, an interim measure until an aggregate approach is developed for ecotox species is to derive risk quotient values for dermal and inhalation toxicity using the existing mammalian toxicity data paired with the existing methods to estimate exposure for those routes using the best available science (see the first website link noted above). Skin irritation and eye irritation are dermal responses that may be pertinent to effect determinations depending on the severity of the response. Mortality is the measurement endpoint in the inhalation LC50 and dermal LD50 mammalian studies and is clearly pertinent to effect determinations for terrestrial species.

The FWS proposes that future discussions would be appropriate to define specific aquatic habitats attributes that would be more representative of the range of habitat various species

occupy and may create more accurate exposure estimates. In this light, we would point to the EPA-proposed wetland definition used in the AgDrift model as one example for species that occupy shallow habitats where the Georgia pond scenario would not represent a worst case exposure estimate.